

App. No. 10/828,944

Amendment Dated March 31, 2006

Reply to Final Office Action of February 1, 2006

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Claims 1 - 29 are pending in the present application. The Final Office Action, dated February 1, 2006: rejected claims 1, 2, 9 - 12 and 21 - 28, objected to claims 3 - 8, and allowed claims 13 - 20 and 29. Claims 3, 4, 23, 25 and 27 have been amended. No new subject matter has been added. For at least the following reasons, the Applicant respectfully submit that the pending claims as amended are in condition for allowance, and notice to that effect is requested.

It is requested that the present amendment be entered on the record and that the finality of the present Office Action be withdrawn. The present Office Action has introduced a new reference that was not previously of record, namely US Patent No. 6,987,380 to Lee. Since this patent was not previously of record, the Applicant had no reason to consider filing the present amendment. Since Applicant has only been made aware of the reference in the present action, it is respectfully requested that the present amendment be entered and given full consideration on the merits. The present amendment and related remarks are believed to place the application in condition for allowance and notice to that effect is requested.

Allowable Subject Matter

Claims 13 - 20 and 29 are allowed in the present action. Claims 3 - 8 are objected to as being depending upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant wishes to thank the Examiner for the indication of allowable subject matter.

Claims 3 and 4 have each been amended to include the limitations of the base claim. Claims 5 through 8 depend upon and further limit claim 4, and should be allowable for at least

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that reason. Claims 3 - 8 are believed to be in proper form for allowance and notice to that effect is requested.

Rejection of claims 1, 2, 9 - 12, 21 - 23, 25, 27 and 28 under 35 U.S.C. § 102(e)

Claims 1, 2, 9 - 12, 21 - 23, 25, 27 and 28 under 35 U.S.C. § 102(e) as being anticipated by *Lee* (U.S. Patent No. 6,987,380). In particular, the Office Action states that “*Lee* discloses a switched mode power converter that is arranged to provide an output signal to a load circuit, the switched mode power converter comprising: ... a sense circuit (592) that is arranged to provide a sense signal that is related to a current in the inductor ... a feedback circuit (510) that is arranged to provide a feedback signal ... a comparator circuit (520) that is arranged to assert a start signal when the feedback signal and the sense signal are approximately equal ... such that the control signal has a variable pulse-width during the non-selected operating phase of the converter.” The following discussion addresses each of the above described features that are recited in Applicant’s claims, and how the *Lee* reference fails to satisfy the limitations sufficient to maintain a rejection under 35 U.S.C. § 102(e).

Claims 1, 23, 25, 27 and 28 have been amended to include further clarification of previously presented features that would have been inherently understood by one of ordinary skill in the art. Claims 1, 23, 25, 27 and 28 are believed to include features that are not described, taught, or otherwise suggested in the *Lee* reference. Claims 2, 9 - 12, and 21 - 22 depend upon and further limit claim 1, and should be allowed for at least that reason.

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Applicant's claim 1 recites the following limitations not found in the *Lee* reference:

"a sense circuit that is arranged to provide a sense signal that is related to a current in the inductor ... wherein the sense circuit is arranged such that the sense signal is **variable over more than two values**;"

"a feedback circuit that is arranged to provide a feedback signal in response to an output signal of the converter, wherein the feedback circuit is arranged such that the feedback signal is **variable over more than two values**;"

"a comparator circuit that is arranged to assert a start signal when the feedback signal and the sense signal are approximately equal during the selected operating phase of the converter".

The "sense signal" and the "feedback signal" described by Applicant's claim 1 are variable over more than two values. The comparator circuit is arranged to assert the start signal when the two values are approximately equal to one another. The *Lee* reference simply does not teach these features. For example, NAND Logic gate 520 is only capable of comparing two digital input signals. As such, it is clearly understood that comparators 510 and 570 in *Lee* each provide a single-bit binary value. Although the Office Action describes comparator 510 in *Lee* as a "feedback circuit", comparator 510 does not satisfy all of the limitations recited above. Additionally, the voltage across resistor 592 in *Lee* is not compared to the feedback signal in a manner that is consistent with Applicant's "sense circuit" described in claim 1.

NAND logic gate 520 in the *Lee* reference cannot satisfy the limitations required for Applicant's "comparator circuit" as described in claim 1. For example, comparator 570 provides one digital signal (COMPI) to one input of NAND logic gate 520, while comparator 510 provides another digital signal (COMPV) to the other input of NAND logic gate 520. When the

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voltage at the output voltage sense is less than VREF, comparator 510 statically maintains digital signal COMPV as a static logic 0 value. In this case, NAND logic gate 520 has a static (i.e., unchanging) value for its output and no value of signal from resistor 592 has any effect.

Similarly, when the output of comparator 570 is a logic 0, no value for the feedback signal has any effect on the output of NAND logic gate 520. As such, NAND logic gate 520 does not provide an output based on the comparison between the two signals, and instead provides a digital logic function.

For at least the reasons stated above, claim 1 is proposed to be allowable. Claims 2, 9 – 12, and 21 – 22 depend upon and further limit claim 1 and should be allowable for at least that reason. Claims 1, 2, 9 – 12, and 21 – 22 are proposed to be in condition for allowance and notice to that effect is requested.

Applicant's claim 23 recites the following limitations not found in the *Lee* reference:

“a sense means for providing a sense signal that is related to a current ... wherein the sense means is arranged such that the sense signal is **variable over more than two values;**”

“a comparison means for asserting a start signal when an output signal associated with the load circuit reaches a threshold during the selected operating phase of the converter, wherein the **output signal is variable over more than two values, and wherein the threshold is associated with the sense signal**”.

The “sense signal” and the “output signal” described by Applicant's claim 23 are variable over more than two values. The Applicant's comparison means is arranged to assert the start signal when the two values reach one another. As described previously above with respect to Applicant's claims 1 and 23, the *Lee* reference simply does not teach these features. Claim 23 is

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believed to be allowable for at least those reasons described above with respect to claim 1.

Claim 24 depends upon and further limits claim 23 and should be allowable for at least that reason. Claims 23 - 24 are proposed to be in condition for allowance and notice to that effect is requested.

Applicant's claim 25 recites the following limitations not found in the *Lee* reference:

"providing a sense signal that is related to a current in the inductor ... wherein the sense signal is variable over more than two values"

asserting a start signal when an output signal associated with a load circuit reaches a threshold during the selected operating phase of the converter, wherein the output signal is variable over more than two values, and wherein the threshold is associated with the sense signal".

The "sense signal" and the "output signal" described by Applicant's claim 25 are variable over more than two values. The Applicant's claim 25 asserts the start signal when the value of the output signal reaches the value of the threshold, which is related to the sense signal. As described previously above with respect to Applicant's claim 1, the *Lee* reference simply does not teach these features. Claim 25 is believed to be allowable for at least those reasons described above with respect to claim 1. Claim 26 depends upon and further limit claim 23 and should be allowable for at least that reason. Claims 25 - 26 are proposed to be in condition for allowance and notice to that effect is requested.

Applicant's claim 27 recites the following limitations not found in the *Lee* reference:

"a sense means for providing a sense signal that is related to a current in the inductor ... wherein the sense means is arranged such that the sense signal is variable over more than two values"

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“a comparison means for asserting a start signal when an output signal associated with the load circuit reaches a threshold during the selected operating phase of the converter, wherein the **output signal is variable over more than two values, and wherein the threshold is associated with the sense signal**”.

The “sense signal” and the “output signal” described by Applicant’s claim 27 are variable over more than two values. The Applicant’s comparison means is arranged to assert the start signal when the output signal reaches the threshold, where the threshold is associated with the sense signal. As described previously above with respect to Applicant’s claim 1, the *Lee* reference simply does not teach these features. Claim 27 is believed to be allowable for at least those reasons described above with respect to claim 1, notice to that effect is requested.

Applicant’s claim 28 recites the following limitations not found in the *Lee* reference:

“a sense circuit ... wherein the sense circuit is arranged such that the **sense signal is variable over more than two values**”

“a feedback circuit that is arranged to provide a feedback signal in response to an output signal of the converter, wherein the feedback circuit is arranged such that the **feedback signal is variable over more than two values**”

“a comparator circuit that is arranged to assert a start signal when the feedback signal and the sense signal are approximately equal during the selected operating phase of the converter”.

The “sense signal” and the “output signal” described by Applicant’s claim 28 are variable over more than two values. The Applicant’s comparator circuit is arranged to assert the start signal when the feedback signal and the sense signal are approximately equal to one another. As described previously above with respect to Applicant’s claim 1, the *Lee* reference simply does

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not teach these features. Claim 28 is believed to be allowable for at least those reasons described above with respect to claim 1, and notice to that effect is requested.

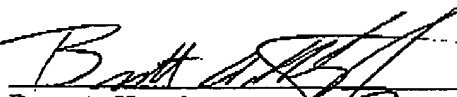
Rejection of claims 24 and 26 under 35 U.S.C. § 103(a)

Claims 24 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Lee* (U.S. Patent No. 6,987,380) in light of *Szepesi* (U.S. Patent No. 4,539,399). Claims 24 and 26 depend upon and further limit claims 23 and 25, which are proposed to be allowable for the reasons stated above. Since claims 23 and 25 are believed to be allowable over the *Lee* reference it is believed that the rejection of claims 24 and 26 under 35 U.S.C. § 103(a) is rendered moot.

In view of the foregoing amendments and remarks, all pending claims are believed to be allowable and the application is in condition for allowance. Therefore, a Notice of Allowance is respectfully requested. Should the Examiner have any further issues regarding this application, the Examiner is requested to contact the undersigned attorney for the applicant at the telephone number provided below.

Respectfully submitted,

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